PCB Implementation Mechanisms Summary
March 17, 2017

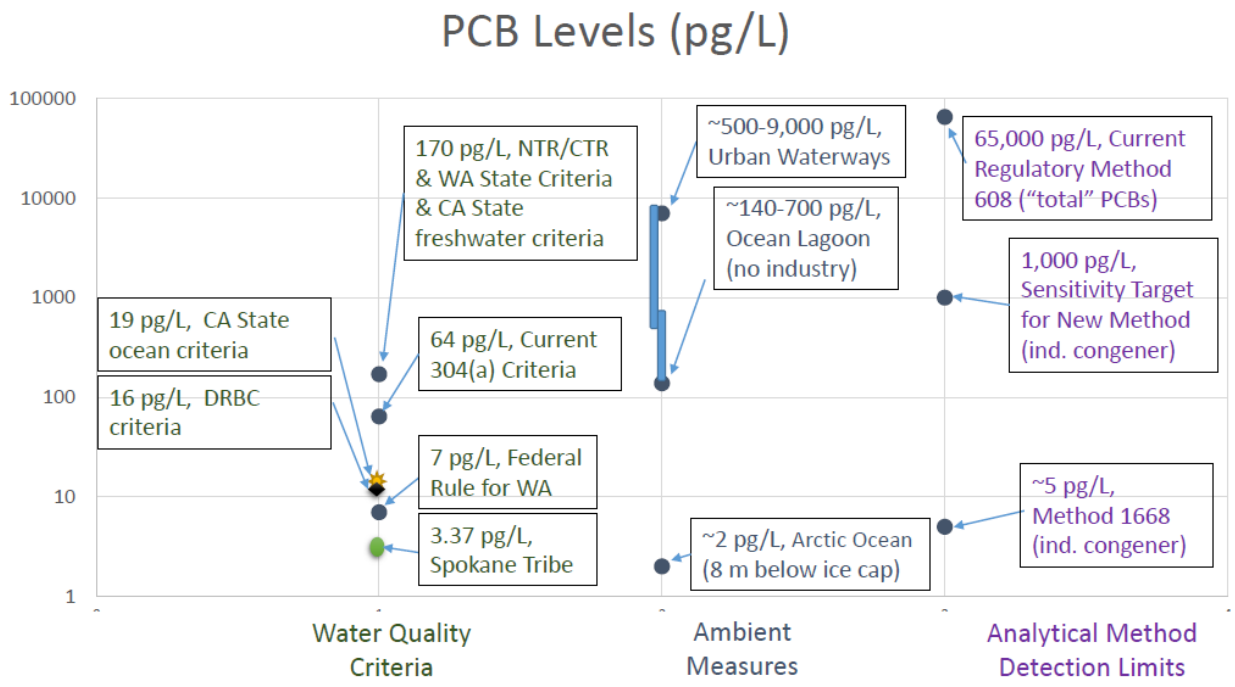
The PCB Table below is based on the following questions answered by the respective regional contacts

- What are the applicable PCB criteria for the state(s) in question?
- What method do they use to monitor for PCBs?
- What CWA tools are they using to implement the PCB criteria? (Are they using variances? Compliance schedules? PMPs? (What details can we glean about the tools they are using?)
- What improvements has that resulted in, in terms of PCB reductions?
- How long has it taken them to get the reductions they've achieved so far?

Table 1. Summary of responses from the regions (R2/3 and R9) about PCB implementation programs.

Program (Region) Primary POC	**What are the PCB criteria?**	**Method**	**Implementation tools**	**Improvements in terms of PCB reductions**	**Time to achieve reductions**
Delaware River Basin Commission, or DRBC (R2 and R3) Wayne Jackson	16 pg/L	1668A	**TMDLs with PMPs** for point-source load reduction; non-regulatory source trackdown/clean-up methods **Adaptive management approach** with a 5-10 year review period	Significant load reductions from largest PCB contributors in the estuary – 46% reduction in point source loadings between 2005 and 2011. Load reductions slow to appear in ambient tissue and water column.	6-7 years The initial TMDL and associated implementation requirements were issued in 2003. Significant load reductions were first shown around 2010 and more are continuing.
California (R9) Terrence Fleming	170 pg/L (freshwater) 19 pg/L (ocean waters)	608 for arochlors; 1668 for congeners	**TMDLs** with compliance schedules TMDLs have led implementers to focus on ways to capture stormwater sources of PCBs. In SF Bay studies of sediments in catch basins has been a way to identify which waterbodies contribute to the PCB problem and move upstream to identify sources.	Dramatic load reductions from obvious PCB sources. There are still areas where PCB concentrations in fish and/or sediment are high and these levels are decreasing slowly over time.	45 years The obvious sources of PCBs were identified and the loadings have been reduced dramatically over the last 45 years. It is likely to take another 50 years before SF Bay or the Palos Verdes shelf will meet the objectives.

Figure 1. A comparison graph of human health water quality criteria for PCBs in the DRBC states, Washington, and California as well as ambient measures and analytical method detection limits.



Background and Implementation Steps

Delaware River Basin Commission (DRBC)
http://www.state.nj.us/drbc/programs/quality/pmp.html

- The Delaware Estuary Basin is 133 miles long and bordered by Delaware, New Jersey, and Pennsylvania, all of which have higher PCB criteria levels than the DRBC. The estuary consists of five water quality management units called Zones. EPA Region 2 is the lead but working with Region 3 and utilizing DRBC for technical assistance.
- In 1996, DE, NJ, and PA identified the estuary as impaired due to high levels of PCBs in fish tissue
- In 2003, EPA issued estuary TMDLs for PCBs for Zones 2-5; and for Zone 6 in 2006.
- In May 2005, DRBC (the Commission) approved a rule authorizing the Commission to require Pollutant Minimization Plans (PMPs) for point or non-point discharges of a toxic pollutant following issuance of a TMDL for the pollutant by a state or EPA or the issuance of an assimilative capacity determination (similar to a TMDL) for the pollutant by the DRBC
- Significant loading reductions were achieved by implementing PMPs that include PCB minimization measures and monitoring with method 1668A, a highly sensitive analytical method capable of detecting PCB congeners (209 in this case) at concentrations below water quality criteria for PCBs
    - Point source reductions utilize NPDES permitting program
    - Non-point source (tributaries, boundaries, contaminated sites and air sources) reductions utilize the TMDL approach by assigning loadings to each tributary and boundary; the Delaware Toxics Reduction Program (DelTRiP) to identify, prioritize, track load reductions at contaminated sites slated for remediation; and,

identifying, monitoring and controlling (via state and federal regulations) emissions of PCBs into the air.

- A uniform human health-based criterion for PCBs (16 pg/L) was established based on EPA methodologies, area-specific fish consumption rates, updated cancer potency factors, and area-specific bioaccumulation factors. This replaced the old criteria that ranged from 7.9 – 64 pg/L in Zones 2-6.
- The initial TMDLs (Stage 1) were established by EPA due to a Consent Decree as per agreed upon terms with American Littoral Society and the Sierra Club. For Stage 2 TMDLs, EPA cannot establish a TMDL without the request for assistance from the states or without a court order (i.e. consent decree). The states will be asked to provide the necessary requests when the Stage 2 TMDL draft is completed for their comment, which is anticipated in early 2017.

California – SF Bay PCBs TMDL Project
http://www.swrcb.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/sfbaypcbstmdl.shtml

- The EPA Region 9 uses the TMDL process to clean up waters with PCBs. The stakeholder process varies by TMDL.
- In 1994, California issued a sport fish consumption advisory to limit consumption of fish caught in the San Francisco Bay due to high levels of PCBs and other pollutants in fish tissue
- Given the slow degradation of PCBs and high costs to clean up sediment hot spots, the SF Bay PCBs TMDL Project uses a phased approach to pollutant reduction and cleanup to restore beneficial uses of the Bay
- In 2008, the San Francisco Bay Regional Water Quality Control Board (Water Board) adopted a TMDL for PCBs in the Bay. In 2009, the TMDL was adopted by the State Water Resources Control Board. In 2010, the TMDL was approved by the EPA and the State Office of Administrative Law.
- The Water Board is implementing the TMDL, which has a 20-year timeframe for reducing PCBs in fish tissue to safe levels for human consumption (*i.e.*, a ten-fold reduction to an average concentration of 1μg/kg).
- Sources of PCBs: atmospheric deposition, drainage from the Central Valley, municipal and industrial wastewater, storm drains, stormwater runoff, dredging in the Bay, and erosion
- The TMDL is enforced through two NPDES permits:
    - Municipal Regional Stormwater Permit
        - Requires municipalities and cities to reduce controllable sources of PCBs that can be mobilized by stormwater runoff and transported to receiving waters
        - Takes a phased approach by requiring several pilot-scale projects, which will be evaluated for effectiveness in reducing PCB loads
        - Requires permittees to develop a monitoring program for watersheds and a program to reduce health impacts of exposure to PCBs by funding the SF Bay Fish Projects for outreach and educating the public
    - Watershed Permit for municipal and industrial dischargers of PCBs and mercury

    - Requires identification and management of controllable sources of PCBs, use of best management practices to maintain optimum performance of solids removal, and use of updated analytical methods to test for PCBs
    - Requires permittees to develop a program to reduce health impacts of exposure to PCBs by funding the SF Bay Fish Projects for outreach and educating the public
- The Regional Monitoring Program measures PCBs in water, sediment, and fish tissue using the EPA Method 1668A or 1668C. To reduce costs of sampling, the monitoring can be reduced to 40 of the 209 congeners detected using this method and reported in μg/kg dry weight.
- Analytical methods for PCBs in soils should be able to detect total PCBs at approximately 10 μg/kg dry weight for soil.